

A man in a grey suit is working on a laptop in a server room. The laptop screen displays a network configuration interface with various settings and a table of data. The background shows server racks and a window with a view of a city.

# Configuring VTP Clients and Servers on Catalyst Switches

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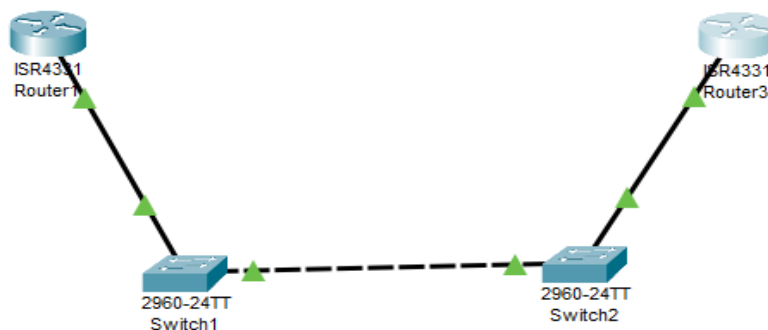
## Project Overview: Configuring VTP Modes on Cisco Catalyst Switches

### Objective:

In this project, I aimed to demonstrate my ability to configure VLAN Trunking Protocol (VTP) server and client modes on Cisco Catalyst Switches. My goal was to showcase a practical understanding of how these modes function, starting with the default state of Cisco switches, which operate as VTP servers out of the box. This exercise highlights my hands-on skills in network configuration and my readiness to manage VLAN setups in real-world scenarios.

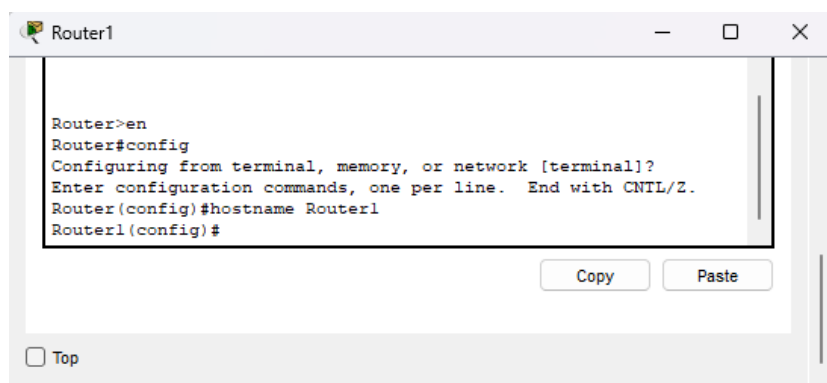
### Purpose:

Configuring VTP server and client modes is a foundational skill for any network engineer, and this project reflects my proficiency in this area. I configured VLANs on a VTP server and ensured that VTP clients within the same domain seamlessly received this VLAN data. To enable VLAN sharing across switches, I implemented trunk links—a critical step for efficient network design. This project mirrors tasks I would encounter as a Cisco engineer and aligns with the expectations of the Cisco CCNA certification, proving my capability to employers in network administration and switch management.



## Project Task: Setting Up Hostnames for VLAN Configuration

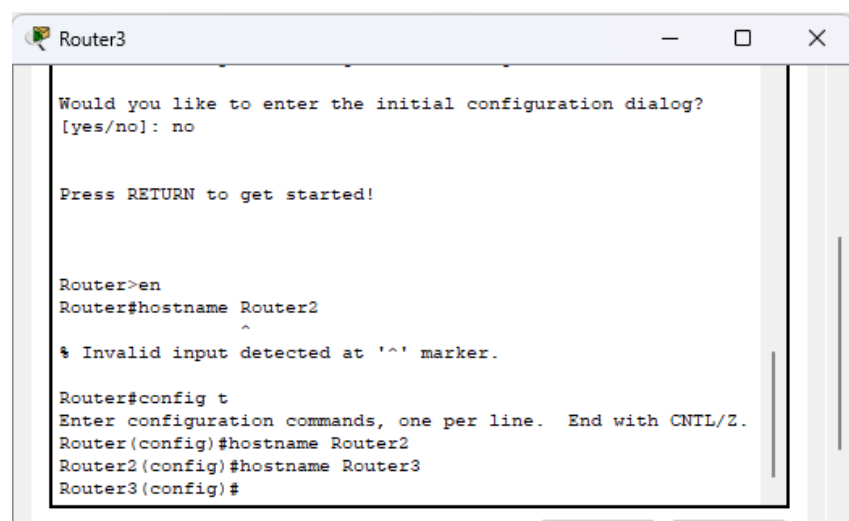
### Task 1:



```
Router1
Router>en
Router#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname Router1
Router1(config)#
```

Copy Paste

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```
Router3
Would you like to enter the initial configuration dialog?
[yes/no]: no

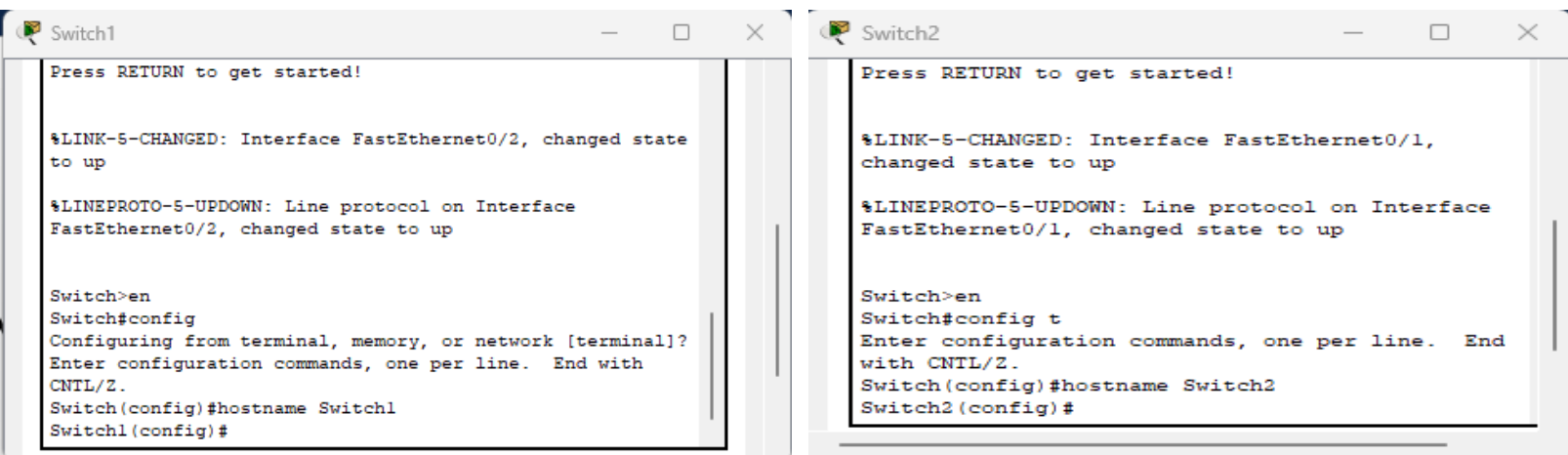
Press RETURN to get started!

Router>en
Router#hostname Router2
^
% Invalid input detected at '^' marker.

Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname Router2
Router2(config)#hostname Router3
Router3(config)#
```

My first task was to lay the groundwork for VLAN configuration by assigning hostnames to the switches and routers as outlined in the network topology. This step highlighted my attention to detail and ability to follow a structured setup process, ensuring clarity in device identification within a network. I worked with Cisco Catalyst Switches, which, by default, operate in VTP

server mode—a key detail I accounted for during configuration. To establish connectivity between the switches, I used a crossover cable, demonstrating my practical knowledge of physical network setup. This foundational task reflects the skills I'd bring to an employer, combining technical precision with an understanding of Cisco device behavior to prepare for advanced VLAN management.



```
Switch1
Press RETURN to get started!

%LINK-5-CHANGED: Interface FastEthernet0/2, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to up

Switch>en
Switch#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with
CNTL/Z.
Switch(config)#hostname Switch1
Switch1(config)#

Switch2
Press RETURN to get started!

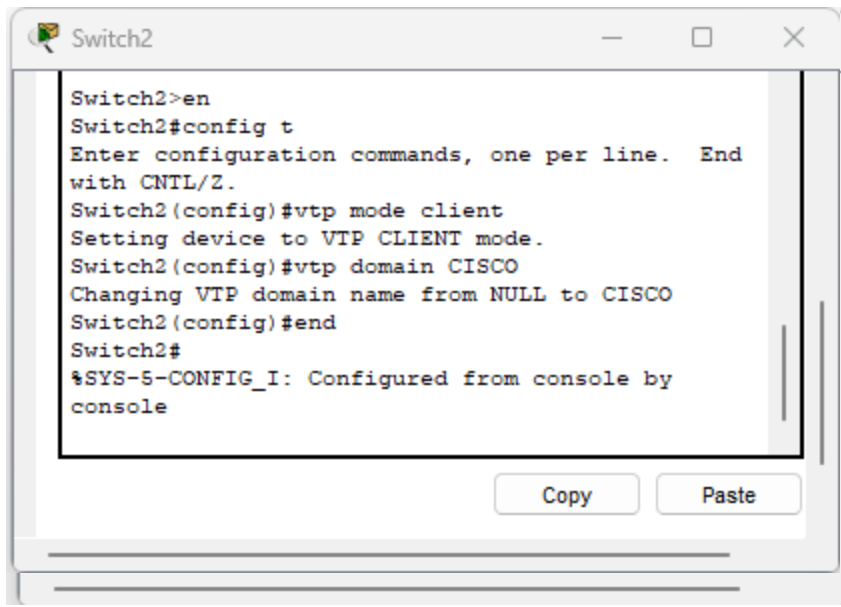
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up

Switch>en
Switch#config t
Enter configuration commands, one per line. End
with CNTL/Z.
Switch2(config)#hostname Switch2
Switch2(config)#
```

## Project Task: Configuring and Verifying VTP Server and Client Modes

### Task 2:

A screenshot of a terminal window titled "Switch2". The terminal shows the following commands and output:

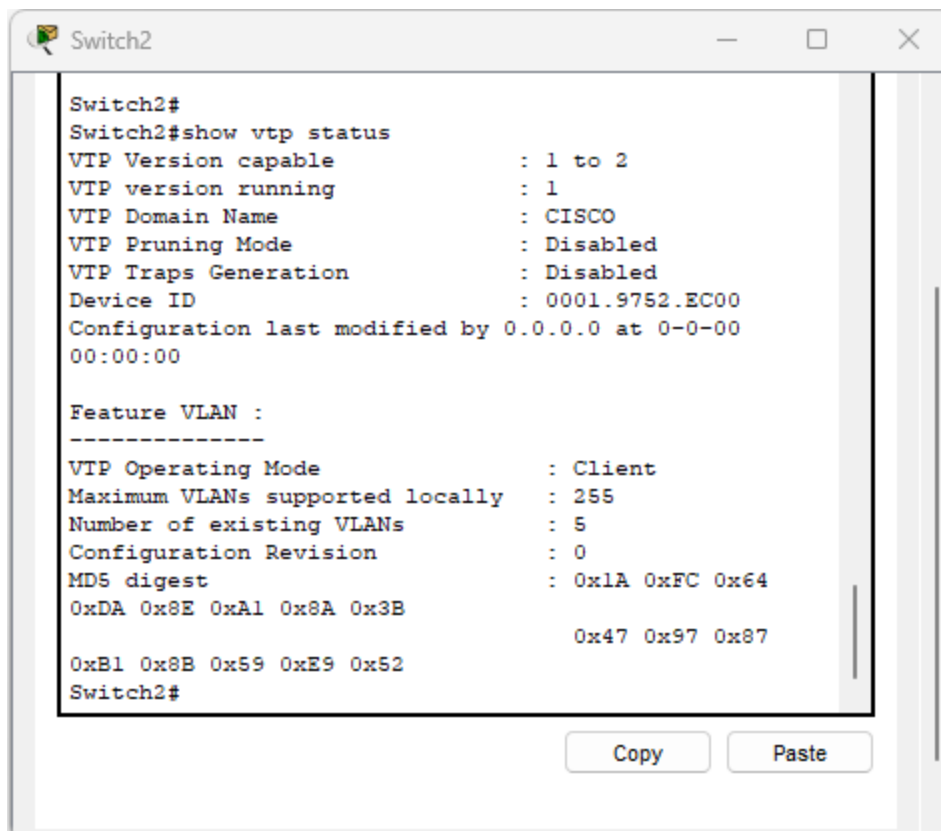
```
Switch2>en
Switch2#config t
Enter configuration commands, one per line.  End
with CNTL/Z.
Switch2(config)#vtp mode client
Setting device to VTP CLIENT mode.
Switch2(config)#vtp domain CISCO
Changing VTP domain name from NULL to CISCO
Switch2(config)#end
Switch2#
%SYS-5-CONFIG_I: Configured from console by
console
```

At the bottom of the terminal window, there are "Copy" and "Paste" buttons.

In this task, I configured Switch 1 (Sw1) as a VTP server and Switch 2 (Sw2) as a VTP client, ensuring both operated within the VTP domain named "CISCO." My objective was to demonstrate my ability to establish a functional VTP hierarchy, a critical skill

for managing VLANs in a network environment. I began by setting Sw1 as the VTP server, where VLANs would be created and propagated, and then configured Sw2 as a VTP client to receive this VLAN information seamlessly. Assigning both switches to the "CISCO" VTP domain ensured they communicated effectively. After configuration, I verified the setup to confirm Sw1 was correctly distributing VLAN data and Sw2 was receiving it, highlighting my troubleshooting and validation skills. This task highlights my capability as a network engineer proficient in Cisco switch configuration and VTP deployment.

## Verification

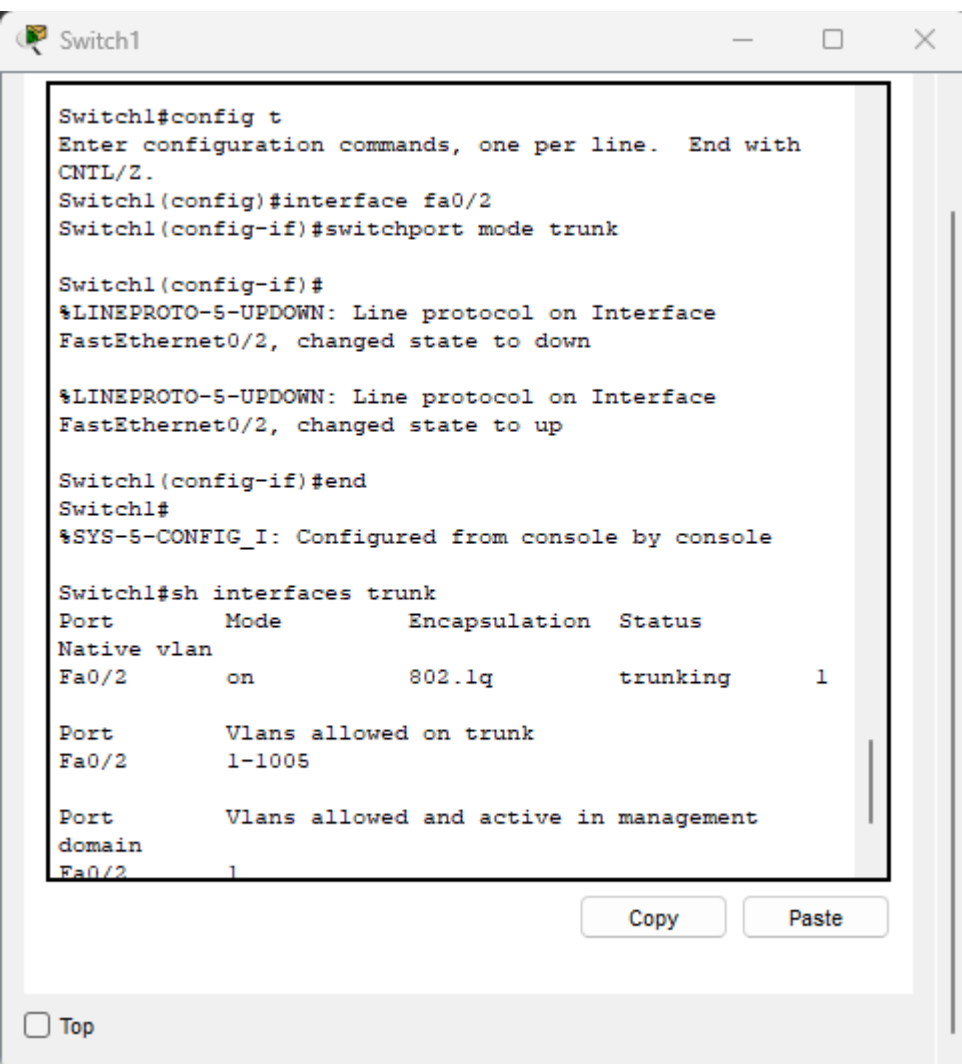


```
Switch2#
Switch2#show vtp status
VTP Version capable      : 1 to 2
VTP version running      : 1
VTP Domain Name          : CISCO
VTP Pruning Mode         : Disabled
VTP Traps Generation     : Disabled
Device ID                : 0001.9752.EC00
Configuration last modified by 0.0.0.0 at 0-0-00
00:00:00

Feature VLAN :
-----
VTP Operating Mode       : Client
Maximum VLANs supported locally : 255
Number of existing VLANs : 5
Configuration Revision    : 0
MD5 digest               : 0x1A 0xFC 0x64
                          0xDA 0x8E 0xA1 0x8A 0x3B
                          0x47 0x97 0x87
                          0xB1 0x8B 0x59 0xE9 0x52
Switch2#
```

Project Task: Configuring and verifying an 802.1Q Trunk Link

### Task 3:



```
Switch1#config t
Enter configuration commands, one per line. End with
CNTL/Z.
Switch1(config)#interface fa0/2
Switch1(config-if)#switchport mode trunk

Switch1(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface
FastEthernet0/2, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface
FastEthernet0/2, changed state to up

Switch1(config-if)#end
Switch1#
%SYS-5-CONFIG_I: Configured from console by console

Switch1#sh interfaces trunk
Port      Mode      Encapsulation  Status
Native vlan
Fa0/2     on        802.1q         trunking    1

Port      Vlans allowed on trunk
Fa0/2     1-1005

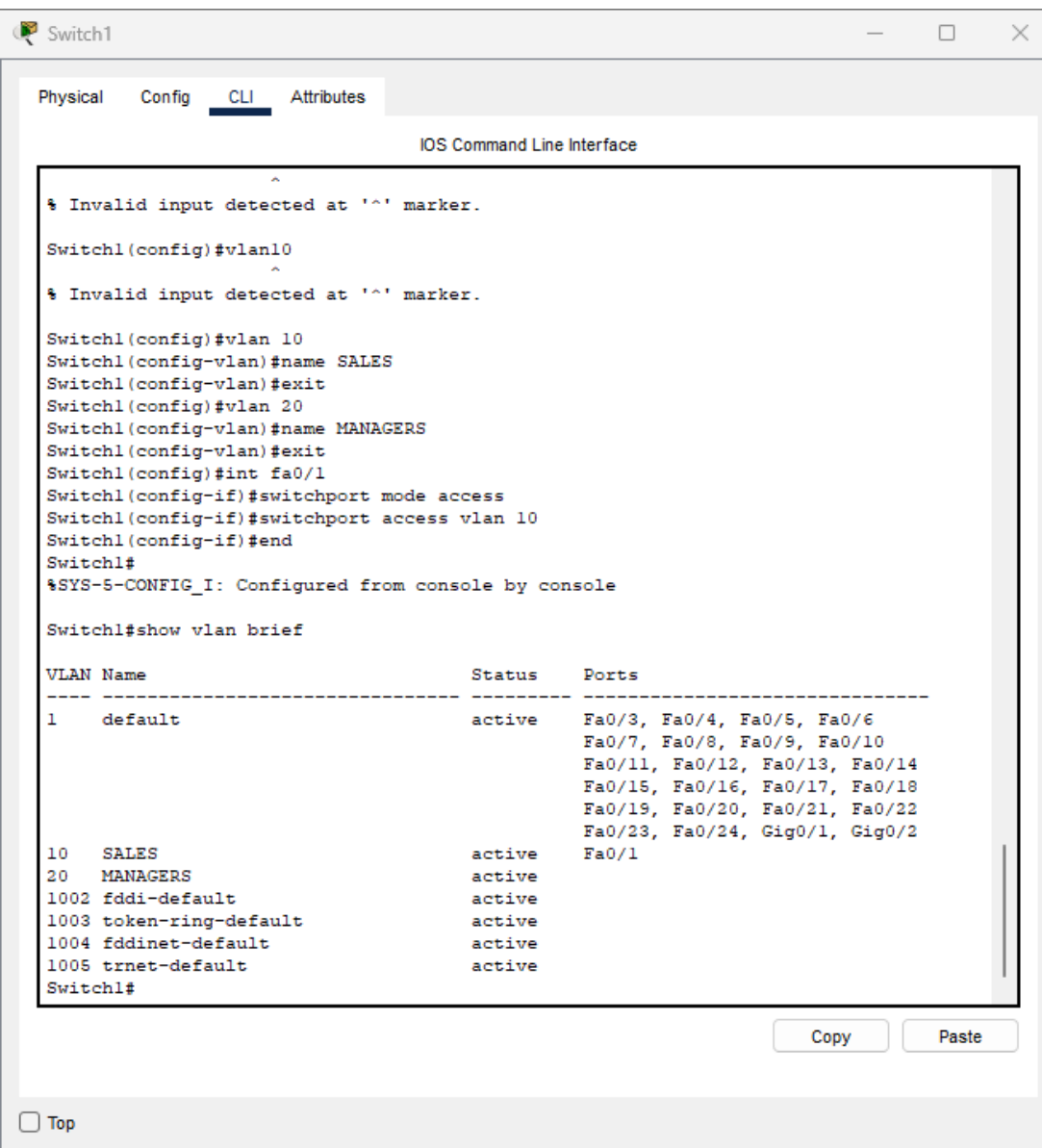
Port      Vlans allowed and active in management
domain
Fa0/2     1
```

For this task, I configured and verified the FastEthernet0/2 interface between Switch 1 (Sw1) and Switch 2 (Sw2) as an 802.1Q trunk link. My goal was to enable VLAN sharing across the switches, a key component of efficient network design. I set up the trunk using the IEEE 802.1Q standard, which tags VLAN traffic to ensure proper segmentation and communication between Sw1 (the VTP server) and Sw2 (the VTP client) within the "CISCO" VTP domain. After configuration, I verified the trunk's

operational status, confirming that it was active and correctly passing VLAN data. This task demonstrates my hands-on expertise in establishing trunk links on Cisco Catalyst Switches, as well as my ability to validate connectivity—skills that are directly applicable to real-world network engineering roles.

Project Task: Configuring and Verifying VLANs with Access Port Assignment

## Task 4:



The screenshot shows a Cisco IOS Command Line Interface for Switch1. The CLI is in configuration mode. The user has configured two VLANs: VLAN 10 named 'SALES' and VLAN 20 named 'MANAGERS'. They have also configured interface Fa0/1 as an access port for VLAN 10. The configuration is saved to the startup configuration. The user then runs the 'show vlan brief' command to verify the configuration. The output shows that VLAN 10 is active and associated with Fa0/1, while VLAN 20 is also active but has no associated ports. Other default VLANs (1, 1002, 1003, 1004, 1005) are also listed as active.

```
Switch1(config)#vlan10
Switch1(config-vlan)#name SALES
Switch1(config-vlan)#exit
Switch1(config)#vlan 20
Switch1(config-vlan)#name MANAGERS
Switch1(config-vlan)#exit
Switch1(config)#int fa0/1
Switch1(config-if)#switchport mode access
Switch1(config-if)#switchport access vlan 10
Switch1(config-if)#end
Switch1#
%SYS-5-CONFIG_I: Configured from console by console

Switch1#show vlan brief

VLAN Name                Status    Ports
-----
1    default                active    Fa0/3, Fa0/4, Fa0/5, Fa0/6
                                           Fa0/7, Fa0/8, Fa0/9, Fa0/10
                                           Fa0/11, Fa0/12, Fa0/13, Fa0/14
                                           Fa0/15, Fa0/16, Fa0/17, Fa0/18
                                           Fa0/19, Fa0/20, Fa0/21, Fa0/22
                                           Fa0/23, Fa0/24, Gig0/1, Gig0/2
10   SALES                  active    Fa0/1
20   MANAGERS              active
1002 fddi-default          active
1003 token-ring-default   active
1004 fddinet-default      active
1005 trnet-default        active
Switch1#
```

In this task, I configured and verified VLANs 10 and 20 on Switch 1 (Sw1), assigned them specific names, and ensured their proper propagation as part of my VTP server setup. I then assigned the FastEthernet0/1 interface on both Sw1 and FastEthernet0/2 on Sw2 to VLAN 10, configuring these interfaces as access ports to support device connectivity within that VLAN. My

approach involved defining VLAN 10 and VLAN 20 on Sw1, leveraging its role as the VTP server to share this configuration with Sw2 (the VTP client) in the "CISCO" domain. After setting the access ports, I verified that FastEthernet0/2 on both switches was correctly associated with VLAN 10 and functioning as intended. This task displays my ability to manage VLAN creation, assign ports,



Switch2

Physical

Config

CLI

Attributes

IOS Command Line Interface

Switch2#config t

Enter configuration commands, one per line. End with CNTL/Z.

Switch2(config)#int fa0/2

Switch2(config-if)#switchport mode access

Switch2(config-if)#switchport access vlan 10

^

% Invalid input detected at '^' marker.

Switch2(config-if)#switchport access vlan 10

Switch2(config-if)#end

Switch2#

%SYS-5-CONFIG\_I: Configured from console by console

show vlan brief

VLAN Name	Status	Ports
1 default	active	Fa0/3, Fa0/4, Fa0/5, Fa0/6, Fa0/7, Fa0/8, Fa0/9, Fa0/10, Fa0/11, Fa0/12, Fa0/13, Fa0/14, Fa0/15, Fa0/16, Fa0/17, Fa0/18, Fa0/19, Fa0/20, Fa0/21, Fa0/22, Fa0/23, Fa0/24, Gig0/1, Gig0/2
10 SALES	active	Fa0/2
20 MANAGERS	active	
1002 fddi-default	active	
1003 token-ring-default	active	
1004 fddinet-default	active	
1005 trnet-default	active	

Switch2#

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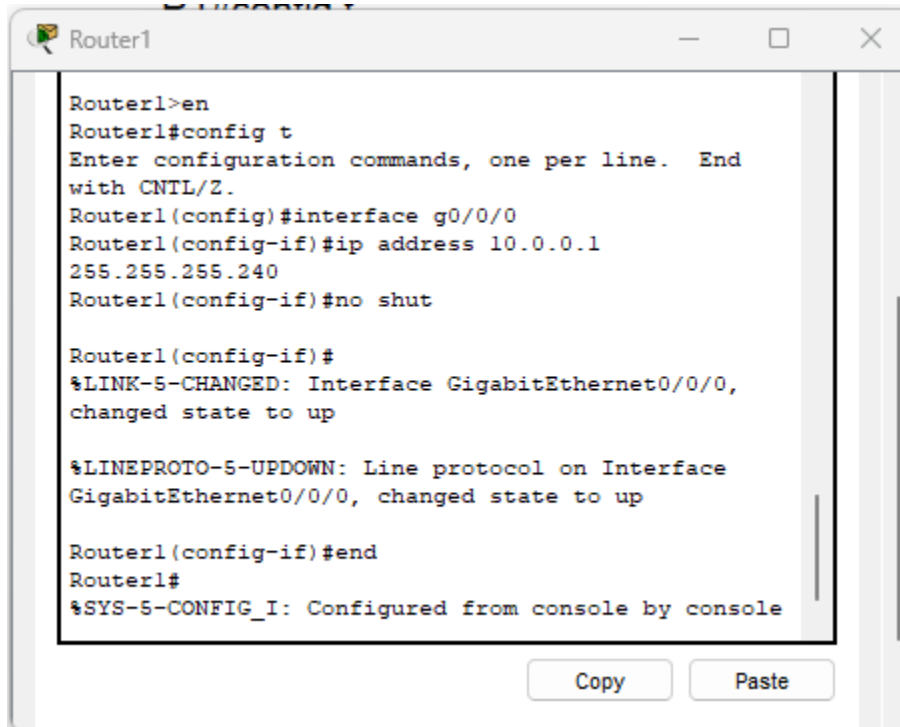
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and ensure consistency across network key competencies that highlight my readiness to contribute to an employer's network infrastructure projects.

## Project Task: Configuring Router Interfaces and Testing VLAN Connectivity

### Task 5:

A screenshot of a terminal window titled "Router1". The terminal shows the following commands and output:

```
Router1>en
Router1#config t
Enter configuration commands, one per line.  End
with CNTL/Z.
Router1(config)#interface g0/0/0
Router1(config-if)#ip address 10.0.0.1
255.255.255.240
Router1(config-if)#no shut

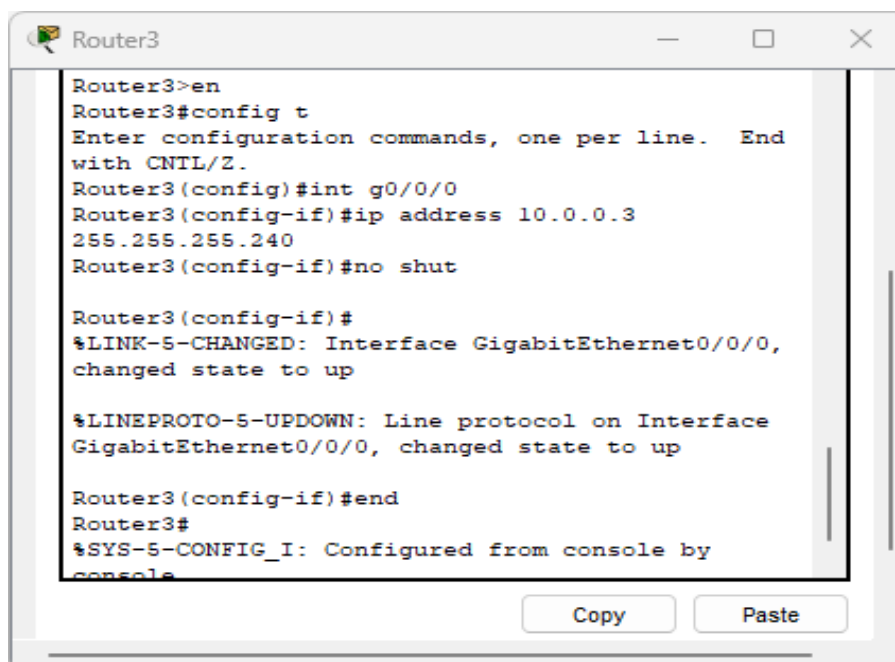
Router1(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0/0,
changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface
GigabitEthernet0/0/0, changed state to up

Router1(config-if)#end
Router1#
%SYS-5-CONFIG_I: Configured from console by console
```

At the bottom of the terminal window, there are "Copy" and "Paste" buttons.

For this task, I configured the Gigabit Ethernet0/0/0 interfaces on Router 1 (R1) and Router 3 (R3) with the IP addresses 10.0.0.1/28 and 10.0.0.3/28, respectively, to integrate them into the VLAN environment.

A screenshot of a terminal window titled "Router3". The terminal shows the following commands and output:

```
Router3>en
Router3#config t
Enter configuration commands, one per line.  End
with CNTL/Z.
Router3(config)#int g0/0/0
Router3(config-if)#ip address 10.0.0.3
255.255.255.240
Router3(config-if)#no shut

Router3(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0/0,
changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface
GigabitEthernet0/0/0, changed state to up

Router3(config-if)#end
Router3#
%SYS-5-CONFIG_I: Configured from console by
console
```

At the bottom of the terminal window, there are "Copy" and "Paste" buttons.

My goal was to ensure proper IP assignment and test network connectivity across the VLANs previously set up on the switches. After configuring the interfaces, I validated the setup by performing ping

```
Router1#show ip interface brief
Interface          IP-Address      OK? Method Status
Protocol
GigabitEthernet0/0/0 10.0.0.1       YES manual up
GigabitEthernet0/0/1 unassigned      YES unset  administratively down
GigabitEthernet0/0/2 unassigned      YES unset  administratively down
Vlan1              unassigned      YES unset  administratively down
Router1#ping 10.0.0.3

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.0.0.3, timeout is 2 seconds:
!!!!
Success rate is 80 percent (4/5), round-trip min/avg/max = 0/3/12 ms

Router1#ping 10.0.0.3

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.0.0.3, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/0 ms

Router1#
```

tests—pinging from R1 to R3 and from R3 to R1—to confirm that traffic was successfully traversing the VLANs. This required ensuring the routers were correctly connected to the switches and that the VLAN and trunk configurations were functioning as expected. Successfully completing these tests demonstrated

my ability to integrate routers with a switched VLAN topology and troubleshooting connectivity.

